

PROTECTION AND SECURITY OF RADIATION SOURCES

The security of radioactive materials, or “sources,” is a top priority for the Nuclear Regulatory Commission to prevent their use by terrorists. The NRC and its Agreement States¹ have imposed a *multi-layered, comprehensive security program* to protect these materials. These measures have been effective, keeping incidents involving radioactive materials to a minimum and their potential consequences low. Most lost or stolen radiation sources are quickly recovered, resulting in little or no radiation exposure or contamination. The NRC continues to work with domestic and international organizations on a variety of initiatives to make risk-significant radiation sources² even more secure and less vulnerable to terrorists. The United States is the first country in the world to require such enhanced security measures for radioactive materials, and NRC continues to lead the way in the security of sources as the preeminent nuclear regulatory agency in the world.

Benefits of Radioactive Materials

A radiation “source” is a piece of radioactive material produced in a nuclear reactor and consisting of an isotope such as cobalt-60, iodine-131, cesium-137 or americium-141. The radiation they emit is useful in a variety of ways in industry, medicine and research. For example:

- Gauges measure the moisture in soil during construction of roads and buildings, or the flow of liquids through pipes.
- Radiography cameras detect structural flaws in buildings or pipe welds.
- Irradiators sterilize medical equipment and blood, or eliminate pests from food.
- Well-logging devices help map oil and natural gas deposits.
- Isotopes can be used in medicine to detect and treat thyroid issues and cancer, such as brain tumors.

Strong Security Requirements

Before the terrorist attacks of 2001, security requirements for radioactive materials were designed primarily to avoid unintended radiation exposures for workers or members of the public. Since Sept. 11, 2001, the focus has increasingly been on preventing terrorists from using radioactive materials in a “dirty bomb” or a radiation exposure device.

¹ The NRC has signed agreements with 37 states, under which the NRC relinquishes authority to license and regulate radioactive materials used in industry, medicine and research.

² The NRC defines “risk-significant sources” as those listed in Category 1 and Category 2 of the International Atomic Energy Agency’s [“Code of Conduct on the Safety and Security of Radioactive Sources.”](#)

The NRC and Agreement State agencies have implemented comprehensive security measures that are appropriate to the facilities housing the materials and the level of security risk posed by the materials. These measures reflect the NRC's strong commitment to ensuring the security and control of radioactive materials.

The NRC's security program is a multi-layered, non-prescriptive framework that allows licensees to develop security programs specifically tailored to their facilities. Key elements of the program include:

- *Background checks, including fingerprinting, to ensure that people with access to radioactive material are **trustworthy and reliable**.*
- ***Personnel access controls** to areas where radioactive material is stored or used.*
- ***Security plans or procedures** designed to detect, deter, assess and respond to unauthorized access attempts.*
- ***Coordination and response planning** between licensees and local law enforcement agencies.*
- ***Coordination and tracking** of shipments of radioactive material.*
- ***Security barriers** to discourage theft of portable devices containing radioactive material.*

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The NRC and the Agreement States regularly inspect licensees to ensure their security programs meet these requirements and ensure that such materials remain secure. Although there have been no specific, credible threats against radioactive materials, the NRC remains vigilant and coordinates its efforts with other federal agencies and the intelligence community to counter any threat that may arise.

Many of these requirements were spelled out in Orders issued by the NRC and the states beginning in 2005. They are being incorporated into NRC regulations in a final rule approved by the Commission in March 2012. The final rule includes a requirement that licensee personnel in charge of security receive regular training in how to meet the NRC requirements.

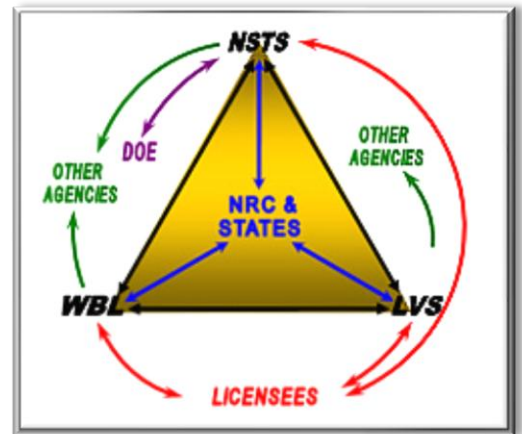
The National Source Tracking System

The [National Source Tracking System](#) is a secure, accessible and user-friendly national database that tracks the most risk-significant sources from the time they are manufactured or imported through the time of their disposal or export. Licensees enter the receipt, transfer or disposal of these sources into the database so the NRC knows where the sources are and how they are being used.

In addition to its security function, the NSTS has also proven useful in the NRC's response to natural disasters such as floods or hurricanes by informing regulators where sources were located so their safety and security could be ensured.

The NRC is also developing a Web-Based Licensing system and a License Verification System. Together with the NSTS, these will form a comprehensive integrated source management program that will include information on all NRC and Agreement State licensees and more than 75,000 risk-significant sources possessed by approximately 1,400 licensees.

This system integration will make information on who is authorized to possess sources available to other federal and state agencies with a role in protecting the nation from nuclear and radiological threats. It will also allow licensees to verify license information and possession authorization before transferring sources and help alert regulators to any discrepancies in source inventories.



Partnership with Other Government Agencies

The NRC and its Agreement State partners conduct regular inspections of materials licensees to ensure that safety and security requirements are met. The Department of Energy's National Nuclear Security Administration retrieves and disposes of unused or abandoned sources. NNSA and NRC also work with licensees to promote voluntary enhancements to the NRC's already robust security requirements so that the most risk-significant sources remain secure and available to perform their beneficial roles for society.

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